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NGLV: Next Gen Learning uniVerse

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Abstract

The world today is seeing numerous technological innovations on a regular basis in various fields. The field of education too has a lot of scope to incorporate some of these innovations and gain immensely from them. One such technology is Augmented Reality. Augmented reality can infuse classrooms with energy, bringing additional ingenuity and bilateral engagement in every session. Such innovative methods of teaching quicken the time spent in understanding convoluted topics. Our project aims to develop a Mobile Learning App that uses AR to enhance teaching methods.

Keywords: *Education, Augmented Reality, Mobile Learning App.*

1. Introduction

Worldwide, the use of AR for education is becoming very popular, with numerous schools adopting it as a regular, and some schools as an experimentative method. Using AR educators are able to see enhanced levels of perception, interaction, as well as student interest leading to decreased number of yawns, which would be a regular in ordinary classes.

AR is even more advantageous than Virtual Reality as it combines virtual content with the real world unlike VR which is a completely virtual experience. The hardware requirements for an AR experience is also very less compared to VR.

AR in training highlights perspectives that improve learning of capabilities like critical thinking, cooperation, and creativity to more readily get the students prepared for the future.

While AR is still to some degree in its earliest stages, particularly in contrast with VR, it offers more expense amicable alternatives to class areas with more tight financial plans – while as yet giving a considerable lot of similar highlights and advantages.

AR's relative consistency of advanced items inside "this present reality" empowers intelligence and commitment. It boosts understudies' capacity to invest their energy learning curricular subjects while limiting the time spent figuring out how to utilize the new tech.

Augmented reality in instruction will before long influence the regular learning measure. AR can possibly change the area and timing of considering, to present new and extra ways and techniques.

AR innovation has a capacity to deliver objects that are difficult to envision and transform them into 3D models, accordingly making it simpler to get a handle on the theoretical and troublesome substance. This is particularly useful for visual students and basically anybody to make an interpretation of hypothetical material into a genuine idea.

AR, differently, could give understudies extra advanced data about any subject, and make complex data clearer.

We have developed a mobile application using the Unity game engine for the app design, UI design, and linking the C# scripts to the app elements to define their behaviours.

We used the Vuforia SDK for Unity to implement AR features.

We used VIVOX SDK for Unity to implement voice and chat features. Most of the gaming industry's leading titles like Rainbow six siege, League Of Legends, Fortite and PUBG use this SDK to implement their inter game multiplayer comms system.

Literature Survey

[1] The Augmented reality is used to teach students about solar-system as part of an undergraduate subject curriculum. Our research addresses shows the how much effect on the UI Ineterface of the learning. They total changed the way of subjects understood, even though its advanced combination of imaged and sensory information that results in a powerful subjective and learning experience

[2] The AR can improve the class atmosphere. In the Futurethe classrooms which using AR superimpose for teachers can contains grades, erp system.And the AR can be used for Social informatoina and as well as mediacl purpose.With this new techonogloy teachers can notify the students' needs and recommended courses

[3] Studied the potential for AR in education in the future. Its good for students to await developments in AR so that the students can develop for the future changes.the feature updates AR will be most affective and vry useful for the students. This AR will help a lot in military sector with the various features.

[4] Students after using the AR based techonology apps that we found grasping the content and remembering the concepts is improved well enough through the test results.Our exploratory shows that that Ar can be useful for kindergarten students.

2. Materials And Methods

The hardware requirements for the system include 4 GB RAM and software requirements include Unity3D, Blender, and Android Studio. User requirements include smartphone and Android (7.0 or other higher version) or IOS (10 or other higher version). Figure 1 and 2 represent the methodology of the system.

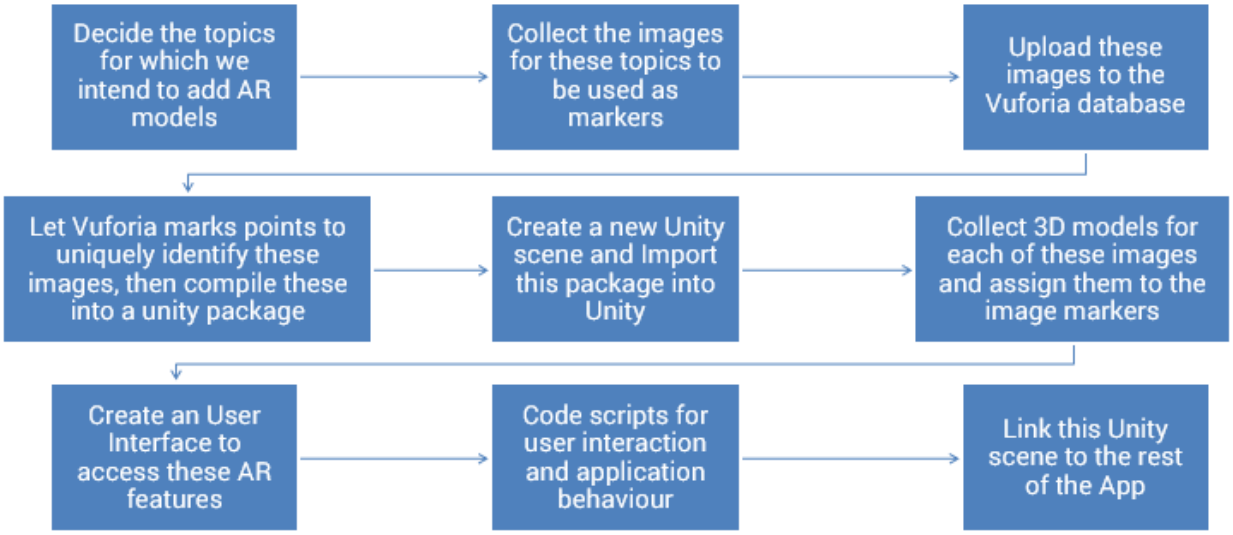

Figure 1: The methodology of AR implementation

First, we have to choose right topic. And that topic should be good for implementing AR models. Once we decides the topics now we can collect all the images for the particular topics. Then we have to upload the images into the Vuforia, before uploading into the Vuforia the images have to scanned. The Vuforia make the put the unique points on each image so that images AR will easily identify the database. Create a new I unity install these Vuforia databases into the new project. Collect the 3d models of each images arrange the 3d models in AR scene based on the image. In the main scene of the project make an UI for the user to see all the features.

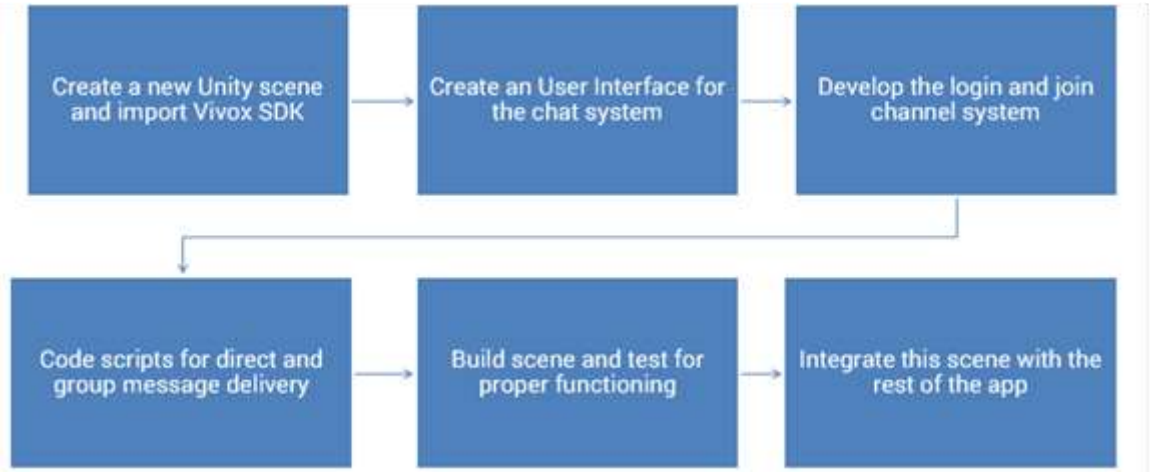

Figure 2: The methodology of Chat implementation

In the main project import a package called Vivox sdk. Create the UI for the chat system. Build the login and join channel based on the channel number and write the scripts accordingly features. Build the scene and test the features of the chat system and integrate with the main app.

First task is to decide on a topic that the user want to implement augmented reality.

Import the database from Vuforia and the database are the target images for the each 3d models and have to choose the package based on the selected topics. Then divide the targets based on the 3d models. After that making sure that each 3d models is attached to the right target images. so the user can directly get the 3d models once the user scans the target images [5-10].

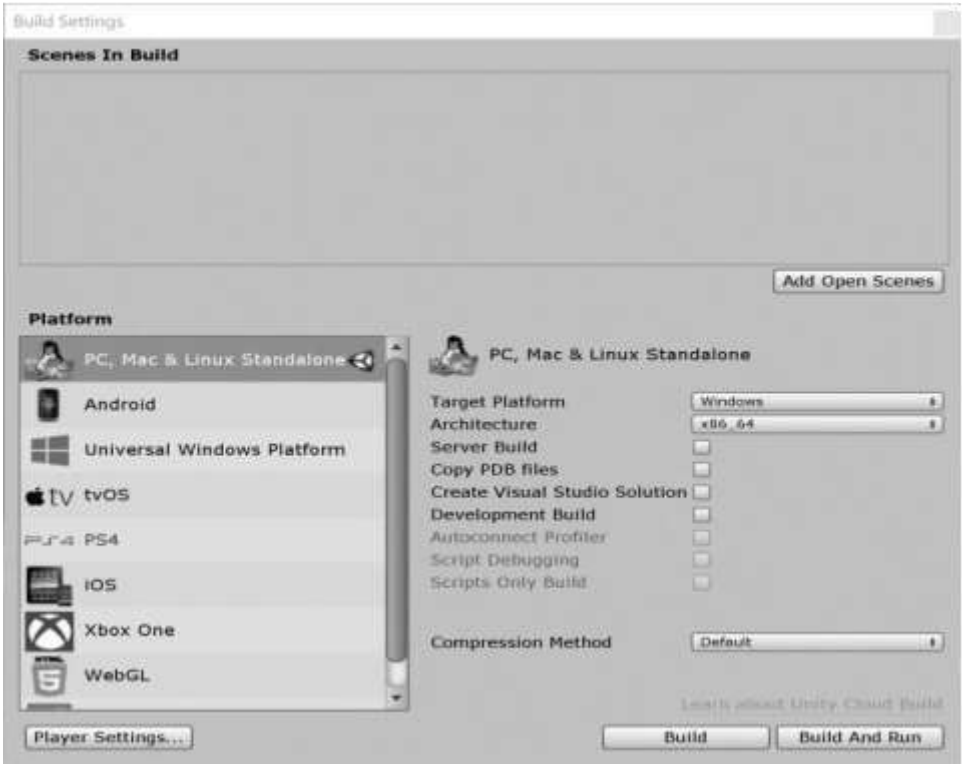

Figure 4: Build Process

After every test of each scene of the app the app will come for the build process in the build process the developer can choose the right platform based on the requirements. After choosing the Android platform now the developer can build and run the app.

IV. IMPLEMENTATION

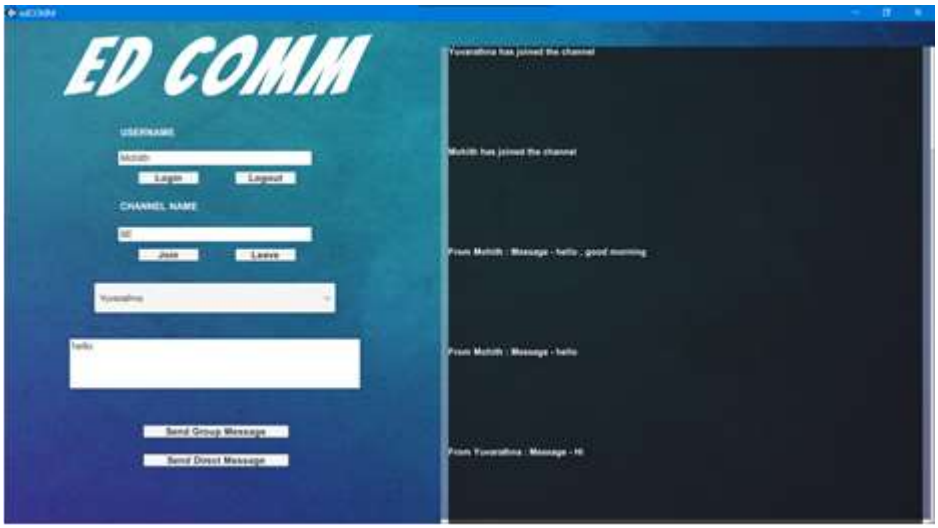

Figure 5: Chat System

The above image shows the chatting UI of the desktop version. There is a desktop version for this app with this desktop version students can install the package in desktop and the join meeting through the desktop and they send their quires in the message.

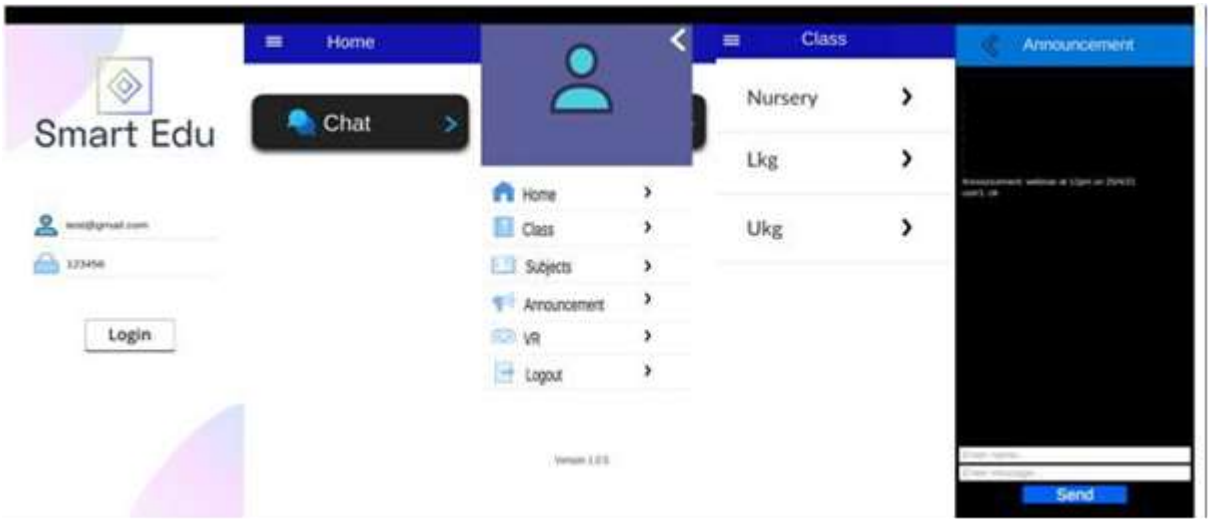

Figure 6: Custom Credentials and System UI

The above image are showing the app UI. Once the user opens the app he'll get the login page after login with the custom credentials the user gets the home page from here users can navigate the different pages through the menu panel.

Figure 7: AR Features

These the images of the app scan the target databses and based on the targets its showing the 3d models. The 3d models super responsive, resizable and fully responsive.

V. APPLICATIONS & FUTURE ENHANCEMENTS

Applications of AR include it can help students can understand easily the complicated concepts, as well as motivate them to study. AR applications helps medical student to learn and understand more deeply. It also helps the public to visualize things where their entry is restricted. AR can be used in the museums and zoo parks, so that visitors can feel as they are touching the objects. Virtual practise can be implemented with AR features. This can be made realistic with augmented educational training, digital designs, simulations and obtain experience and knowledge at the end.

The future applications include the AR headsets by Microsoft's HoloLens or Oculus VR headset of Facebook. Similar to most augmented reality headsets, this also work when connected to PC. The future may see smart glasses or smart contact lens be all the rage. In medical field, students use AR technology for practicing surgery in any controlled environment. The visualizations aid helps them by demonstrating the complex medical conditions of patients. With these patients can understand how complex a condition is. AR reduces the endanger present in an operation by facilitating the surgeon an enhanced sensory perception. MRI or X-ray systems when combined with AR technology brings the whole sum into a single screen for the surgeon.

We can also add many more features on a wider variety ofsubject to make this app a comprehensive learning platform for kindergarten children.

Eventually it is also possible to extend this to all grades of the schooling system, as and when we get our hands on more AR content for higher classes.

We may also add a quiz section to conduct tests.

The final feature that we can add is games that aid in learning, like alphabet and number games. This feature also will be added with the help of Unity.

4. Conclusion

The developed versatile application is extremely useful to understudies of kindergarten as it will assist them with understanding a specific subject better with the assistance of outwardly engaging 3D models. They can associate with these models subsequently partaking in a better time learning experience. Increased reality will likewise make the errand of educating simpler, henceforth permitting instructors to bestow immense measure of information in a brief time frame.

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